Lucent Technologies
Bell Labs Innovations

subject: **Patent Submission – Symbolic Control of Terminal Endpoints**

date: **10/15/98**

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>>>>>>>>>>>>PLEASE LIMIT YOUR SUBMISSION TO 2 to 3 PAGES.<<<<<<<<<<<<
IF YOU HAVE ANY QUESTIONS OR WOULD LIKE A SAMPLE OF A COMPLETED SUBMISSION FORM, PLEASE CONTACT:

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TO: BCS-New Jersey Patent Committee HO 3K-214

SUBJECT OF SUBMISSION:

A wireless terminal is commanded to perform a set of preprogrammed operations in a compressed format. This format is the result of cross-coding a collection of individual commands into a new symbolic format which results in many terminal activities being executed as the result of the transmission of a symbol from the commanding device, switch, or server, and being interpreted by the terminal as the original collection of commands.

OBJECTIVE:
(What overall problem does the proposal solve or what purpose does it serve?)

In a wireless system, bandwidth consumption is an important consideration. Whereas in a wired terminal operation, where new transport mechanisms such as BRI or ATM offer greater and greater bandwidth and there is a reduced need for bandwidth consumption efficiency, a wireless device is restricted to the amount and duration of spectrum that is consumed. By using command symbols instead of explicit individual stimulus commands, a wireless terminal is able to support a full set of services while

consuming less of the limited spectral resource. This results in superior utilization which supports increased terminal density and improved radio link access times.

BRIEF DESCRIPTION:

(1. What is it? 2. How does it operate? Rely on attachments for detailed description.)

Problem

A wireless terminal (WT) is designed to support a collection of user interface and transport entities. The user interface support mechanisms may include an audible or non-audible (such as a vibrator) alerter, a simple visual indicator such as LED or icon, and a display which provides supplemental information. In classical WT designs, whether bit or message oriented, separate fields or information elements are used independent of one another to control specific terminal devices. This requires bandwidth be dedicated according to the length of the message being sent to the terminal; therefore communicating more information in less bits is desirable from a bandwidth consumption perspective. In turn, reduced bandwidth consumption improves access times allowing more terminals to be supported and/or improved system performance.

Solution

In the contemplated design, a collection of common stimuli are defined, and are related in an ordinate/coordinate fashion. Meaningful intersections of the ordinate/coordinate table are assigned codepoints, which are then the basis of the reduced symbol which becomes the command syntax between terminal and serving device.

See attachment for a low-complexity graphical depiction of the symbol generator.

COMPARISON:

(1. What similar things are already known or available? 2. What are the differences of your proposal? 3. What commercial benefits are derived from these differences?)

1). No similar things are known.

2). The difference is outlined above: it is that instead of explicit control commands for individual components, multiple commands are reduced to a symbol, which is then used as the basic control syntax for the terminals.

3) The commercial benefit is that our wireless system will perform in a superior fashion to one which implements the traditional explicit-control design.

USE:

1. What is the probability of commercial use? By LUCENT? By others?

100%. This or a similar structure will be used in the BCS Wizard 3 system.

2. Is it scheduled for use in a LUCENT product or service? Which one, and when?

Current schedule is being finalized; estimated 14 mo. For use in the Wizard 3 premises wireless system.

3. Is this idea likely to be adopted by others outside of LUCENT? If so, why and to what extent?

This idea may be used by other wireless equipment manufacturers since it will provide a measurable benefit to such systems.

4. Is it likely to become a standard?

Indeterminate. While it provides a service benefit by improving the bandwidth consumption gradiant in bandwidth-limited systems, to standardize it at the interoperability level would also require the standardization of WT layouts and functionality.

5. Do you see applications for the idea other than the one described above?)

It would be beneficial in any bandwidth-limited application.

ECONOMIC IMPACT:

(1. What is the expected annual sales volume or revenue of products or services of (a) LUCENT (b) overall marketplace, to which this proposal applies, if used?)

The size of the overall global marketplace is about $2,000M at year 2000. Lucent product expects $200M in annual sales revenue.

FOREIGN INTEREST:

(1. In which foreign countries, if any, should we obtain a patent? Why (e.g., big market there; major competitors are based there)?)

The Wizard 3 product is target for U.S., Europe, Russia, and CALA.

ORIGINATORS OF THE PROPOSAL:

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Attachments:
(identify the memo)

Attachment: User Interface at a Multiple Call Appearance Wireless Terminal

In the following example, the terminal has an Alerter, a number of Display Icons which can vary on a per call basis, a collection of pre-formatted display text lines which are stored in the terminal, and a form of call indicator associated with two Call Appearances (CA-1 and CA-2). Only the switch-to-terminal command symbol table is displayed, however, an obverse function is performed in the terminal for terminal-to-switch communication.

The Command Symbols are generated by cross-referencing known conditions relative to call and/or feature activity at the terminal, as managed by the serving switch.

Command Symbols		Address Domain Call Appearance Attributes (CA-1, CA-2)			
		(n, n)	(n, y)	(y, n)	(y, y)
Content Domain User Interface Attributes (Alerting, Display ICON, Display Parameters)	(n, n, n)	α			
	(n, n, y)		β	ι	π
	(n, y, n)		χ	φ	θ
	(n, y, y)		δ	κ	ρ
	(y, n, n)		ε	λ	σ
	(y, n, y)		ϕ	μ	τ
	(y, y, n)		γ	ν	ω
	(y, y, y)		η	ο	ξ

Legend: The shady areas are not applicable to this application and are therefore not assigned a symbol

α = This symbol commands the terminal to deactivate the alerter, clear the display and icons. No call.

β = This symbol commands the terminal to copy a stored display buffer to the display, alerter off, call on CA-1

χ = This symbol commands the terminal to copy a stored icon to the display, call on CA-1

δ = This symbol commands the terminal to copy an icon and a stored display buffer to the display, and turn the alerter off with a call on CA-1

ε = This symbol commands the terminal to activate the alerter, call available on CA-1

ϕ = This symbol commands the terminal to activate the alerter, copy a stored display buffer to the display, call available on CA-1

Interpretation of the balance of the command symbols is perfomed in a similar manner.